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Growing Eggplant

Prepared by Crops Research Division,
Agricultural Research Service

THE eggplant (*Solanum melongena*) is believed to be native to India where wild forms of it can be found. In warm regions of the Far East, eggplant is a vegetable of major importance. In India, southern China, and the Philippines, for example, eggplant is far more widely and extensively grown than the tomato, but in the Americas the reverse is true.

The eggplant is a subtropical plant that is not only very tender to frost but requires a relatively long growing season of warm weather to produce profitable yields of fruit. Its commercial culture in the United

States is therefore confined almost entirely to the middle and southern latitudes and to low elevations above sea level. It is one of the few vegetables common in this country that also thrives in the humid tropics.

A minor vegetable in the United States, the eggplant is grown for market on less than 4,000 acres, chiefly in Florida and New Jersey. It is not a very popular item in home gardens because it is rather more difficult to grow well than are most other vegetables, and because Americans generally care little for it as a food.

Varieties

In the United States only large-fruited varieties of eggplant are grown commercially. Gardeners and cooks of the Orient, however, consider our large varieties inferior to the small-fruited varieties.

Black Beauty and Florida Market are the eggplant varieties most extensively grown in this country. Fort Myers Market and New York Spineless are also commonly listed by seedsmen.

Black Beauty produces very large, very dark purple fruits that vary from nearly globular to a somewhat flattened, short, egg shape. Plants are 2 to 2½ feet tall and require about 85 days from transplanting to first harvest.

Florida Market is resistant to Phomopsis rot. The fruits are tap-

ering or elongated egg shape, and dark purple. The plant is erect, averaging close to 3 feet. About 90 days is required from transplanting to first harvest.

Fort Myers Market fruits are large, elongated and bell-shaped, and very dark purple. The plants are erect, 2½ to 3 feet tall. The growing period is about 90 days from transplanting to first harvest.

New York Spineless fruits are broad oval to blunt egg shape, a little longer and larger than Black Beauty. Plants are 2½ to 3 feet tall. The first fruits reach harvest about 90 days after transplanting.

New Hampshire is a relatively new, small, early variety adapted to the more northerly or cooler of the districts where eggplant can be

grown. Fruits are smaller than most American varieties, nearly globular to blunt egg shape, and dark purple. The plants are small, only 15 to 18 inches tall, but rela-

tively productive for their size. They should be planted closer than the large-growing varieties. About 75 days is required from transplanting to first harvest.

Climatic and Soil Requirements

Eggplant not only tolerates hot weather but for best growth requires more warmth than any other vegetable commonly grown in this country. It is highly sensitive to frost and is definitely harmed by long periods of chilly but frostless weather. Its temperature requirements are similar to those of the sweetpotato. Plants should be set in garden or field in the spring only after the daily mean temperatures have reached 65° to 70° F. If the plants fail to grow for very many days because of weather too cool or for any other reason they become hardened and stunted. After such stunting they rarely make the large, rapid growth that is desired.

Most varieties will reach first harvest in 85 to 90 days after transplanting, assuming the weather is warm enough for fair growth. A considerably longer total growing

season than that is required, however, for profitable production. Except with the quick-maturing variety New Hampshire, the chances for success are relatively poor in districts having an average growing season of 160 days or less between the last frost in spring and the first in autumn.

Eggplant is not an easy crop to grow. Eggplant can be grown successfully, however, on any good garden or truck-crop soil provided it is rich and well drained. If not naturally very fertile, the soil must be heavily fertilized. Heavy green-manure crops, cover crops, or—on a small scale—applications of compost are needed to provide organic matter required in the soil for best growth of eggplant. Unless rapid, uninterrupted growth is maintained results are likely to be disappointing.

Fertilization

For moderately fertile soils about 750 to 1,000 pounds per acre (20 to 25 pounds per 1,000 square feet) of a good garden fertilizer should be broadcast and worked into the soil during preparation for planting. Three to four weeks after planting, an equal amount should be cultivated in as a topdressing on both sides of the rows.

A fertilizer mixture containing 5 to 6 percent nitrogen, 8 to 10 percent phosphoric acid, and 5 to 7 percent potash is commonly used. Since the crop occupies the soil for a long season and is a heavy feeder it is im-

portant to keep enough nutrients available in the soil over the whole season. If part of the nitrogen cannot be supplied in organic form so as to become slowly available over a long time and thus reduce loss by leaching, it may be necessary to topdress lightly (about 150 pounds per acre) once or twice with nitrate of soda to maintain good leaf color and growth. Equivalent amounts of ammonium sulfate (120 pounds) or ammonium nitrate (about 75 pounds) may be used instead of nitrate of soda.

Growing the Plants

Eggplants are normally established in the field or garden by transplanting from an outdoor plant bed, or more often from a hotbed or greenhouse. In the middle and northern States where the season is relatively short the plants must be started in protected beds. About 8 to 10 weeks is required for growing plants in hotbeds or greenhouses for transplanting. Growth must be moderately rapid and uninterrupted lest the stunting of plants impair their future productiveness. Hard, woody transplants are of little value.

Very briefly, the seeds are sown thickly in a mellow soil in the hotbed, greenhouse bed, or in flats, and covered uniformly with light soil about $\frac{1}{4}$ to $\frac{1}{2}$ inch deep. The soil should be kept moist and warm (70° to 75° F.). In about 2 weeks the seedlings should be large enough to remove from the seed flat, or bed, and transplant into rich, friable soil in $3\frac{1}{2}$ - to 4-inch pots or bands, or 4 to 5 inches apart each way in an-

other bed where they will remain until they are set in the field or garden.

After the seedlings emerge, the temperature should be kept at 65° to 70° F. in daytime and 50° to 55° at night. The plants must not become seriously checked in growth or stunted in any way. Careful attention to watering, ventilation, and temperature control is always necessary. Insects are likely to be troublesome, especially in outdoor beds, but also in greenhouses and hotbeds.

Plants grown in flats or beds should be "blocked out" about a week before they are to be transplanted to the garden. This is done by running a heavy knife or similar tool through the soil halfway between the rows, both across and lengthwise of the bed, leaving each plant in a block of soil that can be moved to the field with the plant. This preserves and protects part of the roots, enabling the plant to recover more promptly from transplanting.

Planting and Cultivation

Since eggplant is sensitive to cool weather it should be set in the field in the spring about 10 days later than tomatoes are usually transplanted. A good general rule is to transplant as soon as the new leaves on oak trees are fully grown. Plants may be set about 2 weeks earlier if they are protected by glassine paper or other appropriate temporary covers. If paper covers are used, they must be torn to provide ventilation as the temperatures rise. The cover must, of course, be removed entirely before the plant becomes crowded beneath it.

Eggplants should usually be set $2\frac{1}{2}$ feet apart in rows 3 feet apart. A small-growing variety such as New Hampshire, can be set $1\frac{1}{2}$ to 2 feet apart in rows $2\frac{1}{2}$ feet apart.

Only shallow cultivation to control weeds or to work in topdressings of fertilizer is necessary.

In most districts that normally depend on natural rainfall, supplemental irrigation is a distinct advantage during dry periods. The eggplant is a rank-growing crop that needs generous moisture at all times.

Diseases and Insects

Fruit rot and wilt are two serious diseases of the eggplant. The fruit rot is characterized by canker-like lesions on the lower part of the stem, by leaf spots which may enlarge until the whole leaf turns brown, and by large, sunken, tan-colored or black areas on the fruits. The disease may be carried over winter by the seed and on the debris in the soil from the previous crop. To help control fruit rot use clean seed and practice a 3- to 4-year crop rotation. Spraying at weekly intervals with maneb gives effective control. Rot-resistant varieties such as Florida Beauty and Florida Market may be grown.

Wilt is particularly common in the cooler regions of the country and is similar in its behavior to the wilt disease of the tomato. It is not carried by the seed but seems to persist in the soil indefinitely and to be distributed by plants from infested seedbeds. Wilt injury ranges from stunting, with decreased productivity, to the death of the plant.

Several insects, particularly flea beetles, aphids, lace bugs, and sometimes the Colorado potato beetle, attack the eggplant. Red spiders also occasionally become troublesome on eggplants, especially during periods of dry weather. For information regarding the control of these pests apply to your local county agent, to your State agricultural experiment station, or to the U.S. Department of Agriculture. Most of the insects that attack the potato may also attack eggplant.

Useful information on the diseases and insects of garden vegetables is contained in Home and Garden Bulletin 46, "Insects and Diseases of Vegetables in the Home Garden." The publication may be obtained by writing the Office of Information, U.S. Department of Agriculture, Washington, D.C., 20250. Send your request on a post card. Include ZIP Code with your return address.

Harvesting and Handling

The fruits of the eggplant may be harvested at any time after they have reached sufficient size, but they should be taken from the plants before the flesh becomes tough and the seeds begin to harden. Since the fruit stems are heavy and tough, the fruits should be harvested by cutting the stems with a sharp knife. Take care to avoid breaking the branches of the plants.

Following harvest, the fruits should be washed and wiped to give them a bright, clean appearance. They should be handled carefully as they are sorted to remove culls and packed in clean containers that will afford protection from mechanical

injury. Bushel baskets and wire-bound boxes are widely used containers for marketing, but ventilated fiberboard boxes are superior in protecting against skin breaks and pressure bruises. Unlined containers with protruding wire staples should not be used. Eggplants should be marketed promptly. A temperature of 45° to 50° F. is recommended for transit and holding.

U.S. standards for field-grown eggplant have been established. Copies of these standards may be obtained by writing the Consumer and Marketing Service, U.S. Department of Agriculture, Washington, D.C., 20250.

Washington, D.C.

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